

Appendix F

U.S. Forest Service

Management Indicator Species Reports

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ANALYSIS OF EFFECTS FOR WALLOWA-WHITMAN NATIONAL FOREST MANAGEMENT INDICATOR SPECIES

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The Wallowa-Whitman National Forest Land and Resource Management Plan (LRMP) identifies five wildlife species, or groups of species, as MIS, or Management Indicator Species. These species are identified because of their special habitat needs that may be influenced significantly by planned management activities, and as a result their populations can be used to indicate the health of a specific type of habitat. These five wildlife species or groups of species are the American marten, Northern goshawk, pileated woodpecker, primary cavity excavators and Rocky Mountain elk. Habitat maps for the American marten, Northern goshawk, and pileated woodpecker are shown in Figures 1 – 6. These habitat maps are for habitat near the Proposed Alternative and Timber Canyon Alternative.

Wales 2011 conducted viability assessments for the marten, the goshawk and the pileated woodpecker within the Blue Mountains and Wallowa-Whitman NF (Tables 1, 2, and 3). These viability assessments used vegetation data from stand exams, aerial photo interpretation and satellite imagery to determine the existing amount of source habitat, the departure from historic conditions, and the quality of the source habitat. Each watershed within the Wallowa-Whitman NF was analyzed to determine the amount of source habitat within, and its ability to support a population of marten, goshawk and pileated woodpecker (Tables 4 and 6). For the purposes of planning, if a watershed suitable habitats for MIS, an effects analysis is conducted to determine the extent a potential project would have on the habitat and its associated species.

The DecAID advisor (Mellen et al. 2006) and “Source habitats for Terrestrial Vertebrates of Focus in the Interior Columbia Basin: Broad-Scale Trends and Management Implications” currently provide the most current, peer-reviewed science available for assessing snag habitat. DecAID is an internet based computer program developed as a tool to help federal land managers evaluate effects of management activities on wildlife species that use dead wood habitats (primary cavity excavators), and is used primarily to compare existing and projected snag levels to wildlife use levels (tolerance levels) (Tables 4 and 6).

The LRMP (U.S. Forest Service, 1990) has established standards for elk habitat on the Forest. These standards are analyzed using a habitat effectiveness model which returns a Habitat Effectiveness Index (HEI) to assess the quality of elk habitat (Thomas et al. 1988). The HEI model evaluates size and spacing of cover and forage areas, density of open roads, quantity and quality of forage available to elk and cover quality. Forage data is unavailable and is not included in the total HEI value. HEI was analyzed for the utility corridor which includes portions of the Beaver Creek- Grande Ronde and Five Points- Grande Ronde watersheds (Table 5), and for the Timber Canyon alternative which includes portions of the Big Creek, Eagle Creek and Ruckles Creek-Powder River watersheds (Table 7).

Past timber project analyses conducted within these watersheds contribute to the current knowledge of MIS habitat conditions. The Wildlife Effects Analysis’ for these projects are on file at the La Grande and Whitman District Offices. These projects are Bald Angel 2006, Trail 2012, and Snow Basin 2012.

LITERATURE CITED

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Table 1. Marten source habitat definition used in the viability assessment (Wales 2011).

Potential Veg. Group	% Canopy Closure	# Canopy Layers	Tree Size (dbh)
Cold moist (cm)	≥60%	Multi-storied	≥20" dbh
Cold dry (cd)			

Table 2. Northern goshawk source habitat definition (Wales 2011).

Potential Veg. Group	% Canopy Closure	# Canopy Layers	Tree Size (dbh)
Dry Ponderosa Pine	>=40%	Single and multi-story	>=15” dbh
Dry Douglas Fir			
Dry Grand Fir			
Cool Moist	>=60%		
Cold Dry			

Table 3. Pileated woodpecker source habitat definition on the WWNF (Wales 2011)

Potential Veg. Group	% Canopy Closure	# Canopy Layers	Tree Size (dbh)
Dry Douglas Fir	≥40%	Single and multi-story	≥20” dbh
Dry Grand Fir			
Cool Moist	≥60%		
Cold Dry			

Table 4. Existing Conditions– Watersheds (5th HUC) affected by Utility Corridor

Watershed	Beaver Creek- Grande Ronde			Five Points- Grande Ronde		
	Supports pop.	Suitable Habitat	Comments	Supports pop.	Suitable Habitat	Comments
American Marten <i>Martes americana</i>	No	-	Lacks the acres of cold/moist multi-story old growth to support a population of marten.	Yes	2,322 acres of identified source habitat	The upper portion of the Five Points watershed is more remote with lower road densities and contains more cold-upland habitat. The combination of warm, dry forest types, early seral stages, and high levels of disturbance and fragmentation in the area surrounding the utility corridor makes this area unlikely to support a population of marten (Trail 2012).
Northern Goshawk <i>Accipiter gentilis</i>	Yes	7,956 acres of identified source habitat	Source habitat intersected by utility line.	Yes	9,058 acres of identified source habitat	Source habitat would be intersected by utility corridor. Removing canopy cover and large trees would affect nesting success. If nests are found, timing restrictions would apply.
Pileated Woodpecker <i>Drycopis pileatus</i>	Yes	3,266 acres of source habitat	Removing large snags would affect foraging and nesting habitat	Yes	2,910 acres of identified source habitat	Ground reconnaissance shows habitat more abundant than indicated by the model (Trail 2012). Removing large snags would affect foraging and nesting habitat
Primary Cavity Excavators	Yes	Conifer forest habitat including Douglas-fir, ponderosa pine, and lodge pole pine, with large diameter snags is found in this watershed.	Snag densities are within the historical ranges as described in DecAID (Mellen et al. 2006), although large snags (≥ 21 in dbh) are limited.	Yes	Predominantly conifer forest habitat including Douglas-fir, ponderosa pine, with large diameter snags is found in this watershed.	Snag densities are within the historical ranges as described in DecAID (Mellen et al. 2006), although large snags (≥ 21 in dbh) are limited (Trail 2012).

Table 5. Habitat effectiveness index calculations for elk habitat within the watersheds affected by the utility corridor

Habitat Effectiveness Variable	Habitat Effectiveness Value (Optimal = 1.0)	Comments
HE cover	0.69	Amount of satisfactory cover relative to marginal cover- No numerical standard in the LRMP, but it states “to provide near-optimum cover and forage conditions for big game”
HE size and spacing	0.75	Mosaic of cover and forage – at least 80% of the treated area that converts cover to forage is to be within 600 ft of a satisfactory cover patch at least 40 acres in size
HE road density	0.54	Open road density ≤ 1.51 mi/ mi ²
Total HEI	0.66	LRMP MA-3 ≥ 0.74 HEI

¹ HEI calculations do not include a forage variable because current, reliable forage data are not available.

Table 6. Existing Conditions – Watersheds (5th HUC) affected by Timber Canyon Alternative

Watershed	Big Creek			Eagle Creek			Ruckles Creek- Powder River		
	Supports pop.	Suitable Habitat	Comments	Supports pop.	Suitable Habitat	Comments	Supports Pop.	Suitable Habitat	Comments
American Marten <i>Martes americana</i>	No	-	Lacks the acres of cold/moist multi-story old growth to support a population of marten.	Yes	10,367 acres of identified source habitat	This watershed contains marten habitat in the northern half, however the area where the alternative is located, is mostly dry and lacks the structure needed by marten.	No	-	Lacks the acres of cold/moist multi-story old growth to support a population of marten.
Northern Goshawk <i>Accipiter gentilis</i>	Yes	6,013 acres of identified source habitat	If nests are found within a 30 acre buffer, timing restrictions would apply	Yes	18,569 acres of identified source habitat	If nests are found within a 30 acre buffer, timing restrictions would apply	No	7,956 acres of identified source habitat	If nests are found within a 30 acre buffer, timing restrictions would apply
Pileated Woodpecker <i>Drycopis pileatus</i>	No	-	Lacks enough snags ≥ 20 dbh” to support a population pileated woodpeckers	Yes	2,910 acres of identified source habitat	Removing large snags would affect foraging and nesting habitat	No	-	Lacks enough snags ≥ 20 dbh” to support a population pileated woodpeckers
Primary Cavity Excavators	Yes	Conifer forest habitat with large diameter snags is found in this watershed	Snag densities are within the historical ranges as described in DecAID (Mellen et al. 2006), although large snags (≥ 21 in dbh) are limited	Yes	Conifer forest habitat including Douglas-fir, ponderosa pine, and lodge pole pine, with large diameter snags	Snag densities vary within the watershed, but generally fall within the 30% tolerance level (Snow Basin 2012).	Yes	Conifer forest habitat with large diameter snags is found in this watershed	Snag densities vary within the watershed but generally fall within the 30% tolerance level (Snow Basin 2012).

Table 7. Habitat effectiveness index calculations for elk habitat within the watersheds affected by the Timber Canyon alternative

Habitat Effectiveness Variable	Habitat Effectiveness Value (Optimal = 1.0)	Comments
HE cover	0.68	Amount of satisfactory cover relative to marginal cover- No numerical standard in the LRMP, but it states “to provide near-optimum cover and forage conditions for big game”
HE size and spacing	0.60	Mosaic of cover and forage – at least 80% of the treated area that converts cover to forage is to be within 600 ft of a satisfactory cover patch at least 40 acres in size
HE road density	0.54	Open road density ≤ 1.51 mi/ mi ²
Total HEI	0.60	LRMP MA-3 ≥ 0.74 HEI

¹ HEI calculations do not include a forage variable because current, reliable forage data are not available.

Boardman to Hemingway Project

Proposed Route: American Marten Habitat Map

Date: 11/13/2014

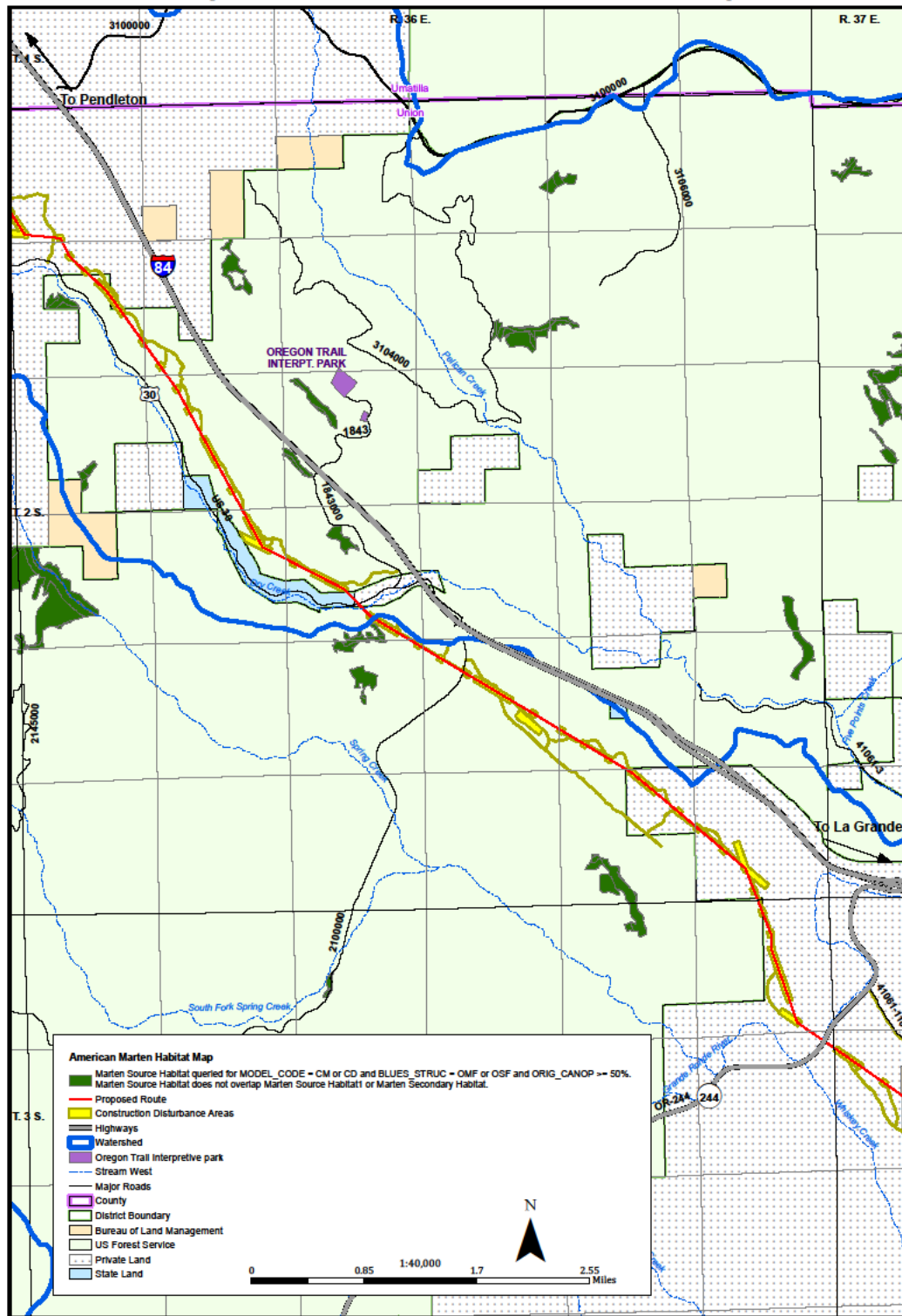


Figure 1. Proposed Route: American Marten Habitat Map

Boardman to Hemingway Project - Timber Canyon Alternative: American Marten Habitat Map

Date: 11/13/2014

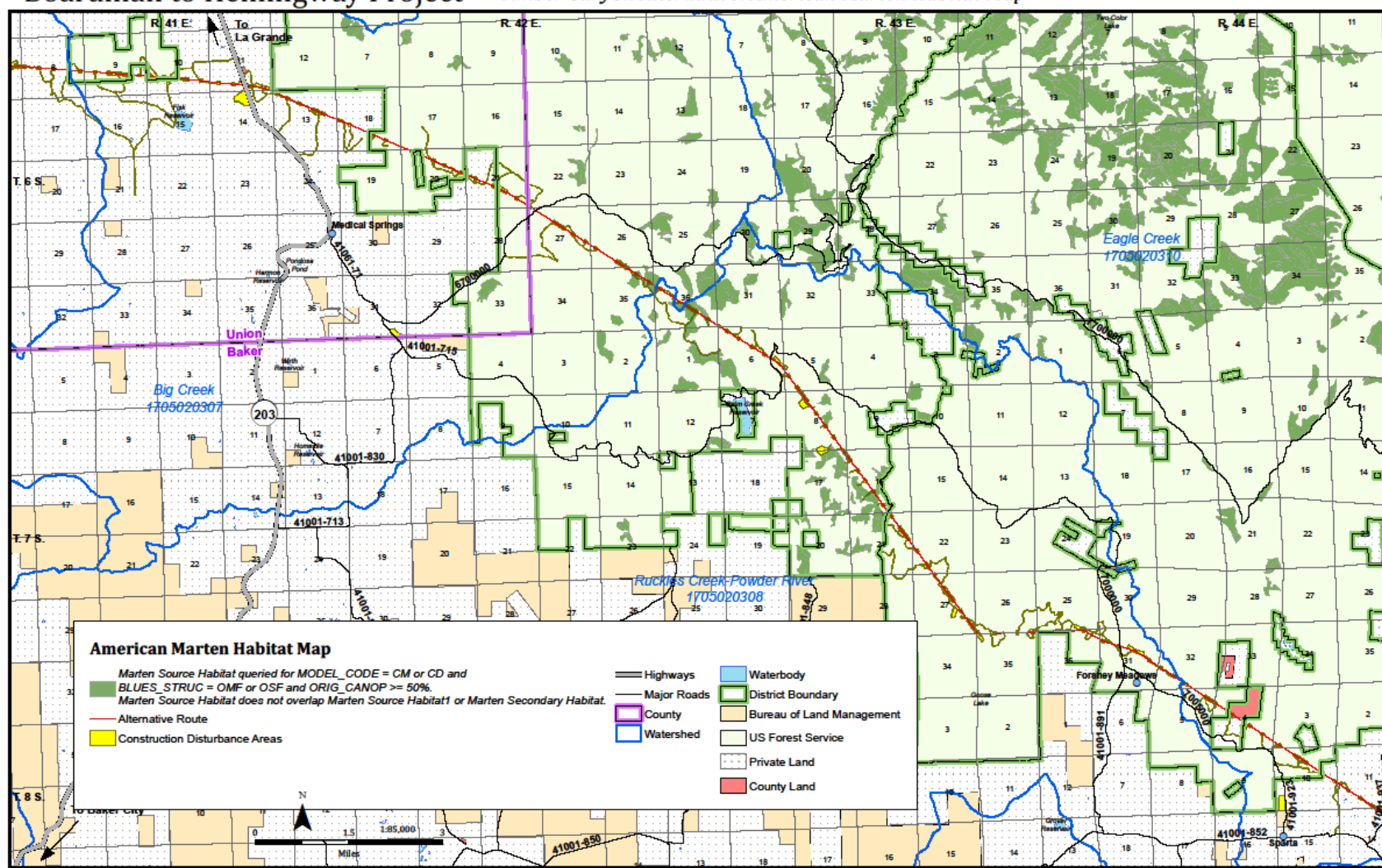


Figure 2: Timber Canyon Alternative: American Marten Habitat Map

Boardman to Hemingway Project

Proposed Route: Northern Goshawk Habitat Map

Date: 11/13/2014

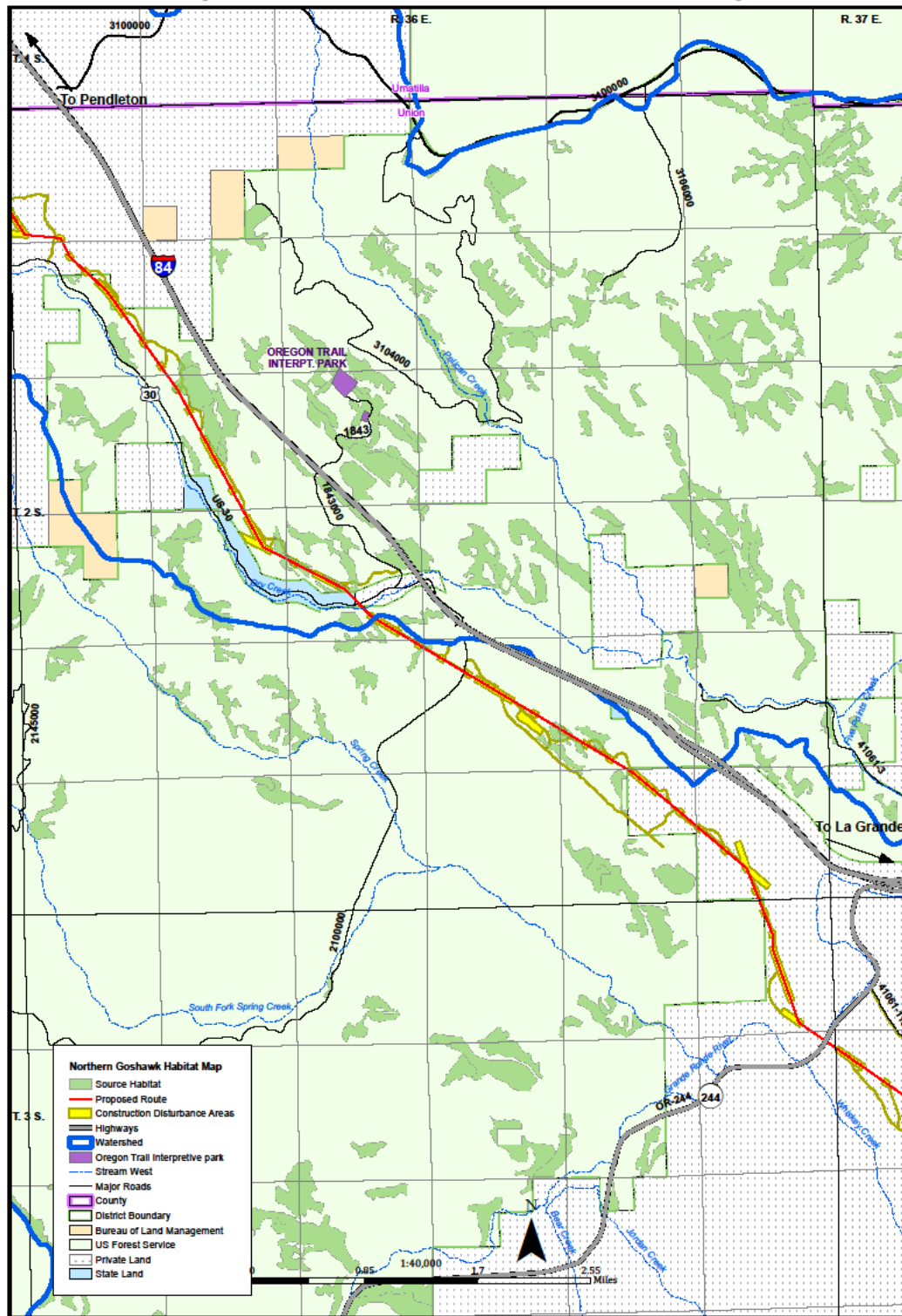


Figure 3: Proposed Alternative: Northern Goshawk Habitat Map

Boardman to Hemingway Project - Timber Canyon Alternative: Northern Goshawk Habitat Map

Date: 11/13/2014

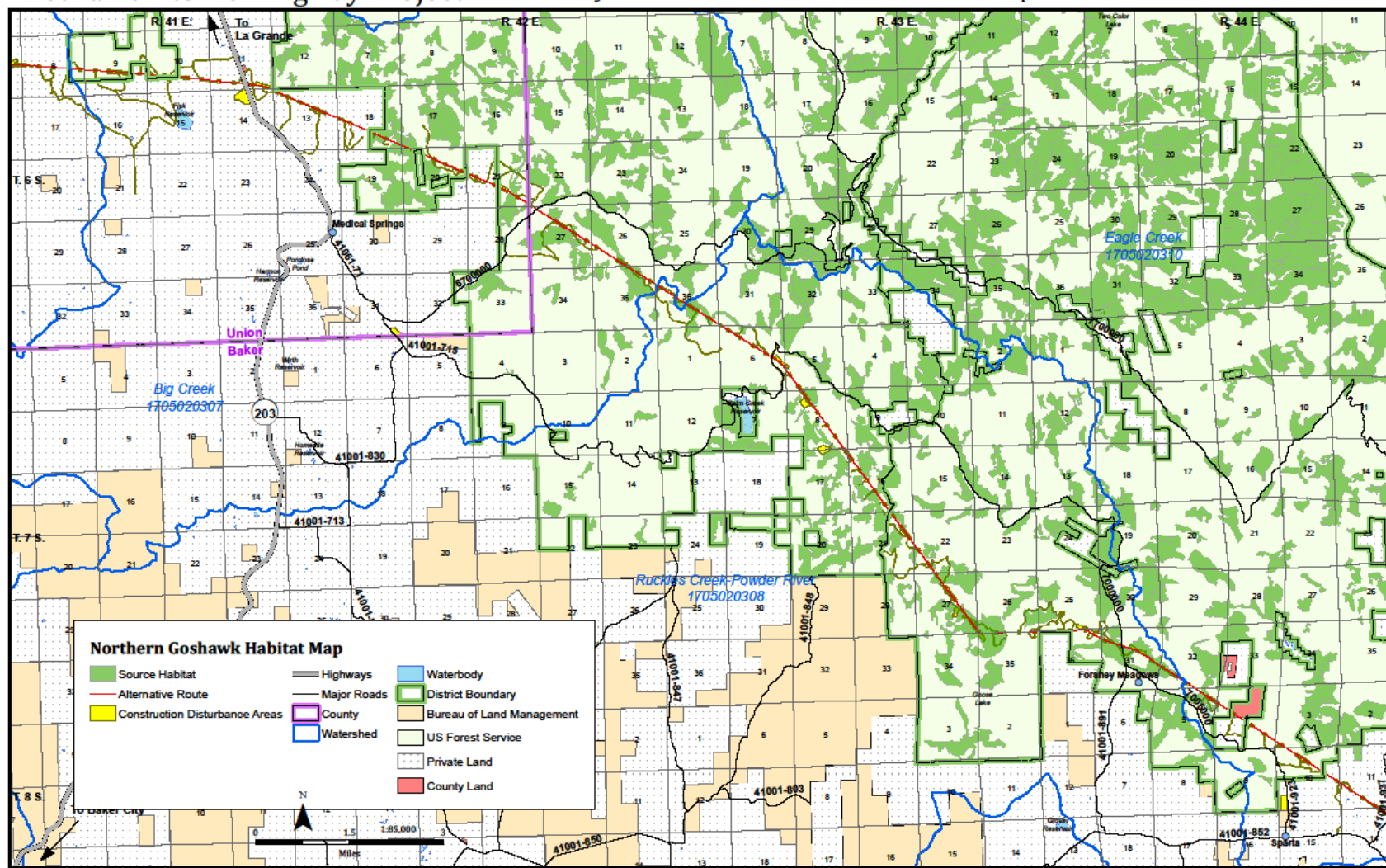


Figure 4: Timber Canyon Alternative: Northern Goshawk Habitat Map

Boardman to Hemingway Project
Proposed Route: Pileated Woodpecker Habitat Map

Date: 11/13/2014

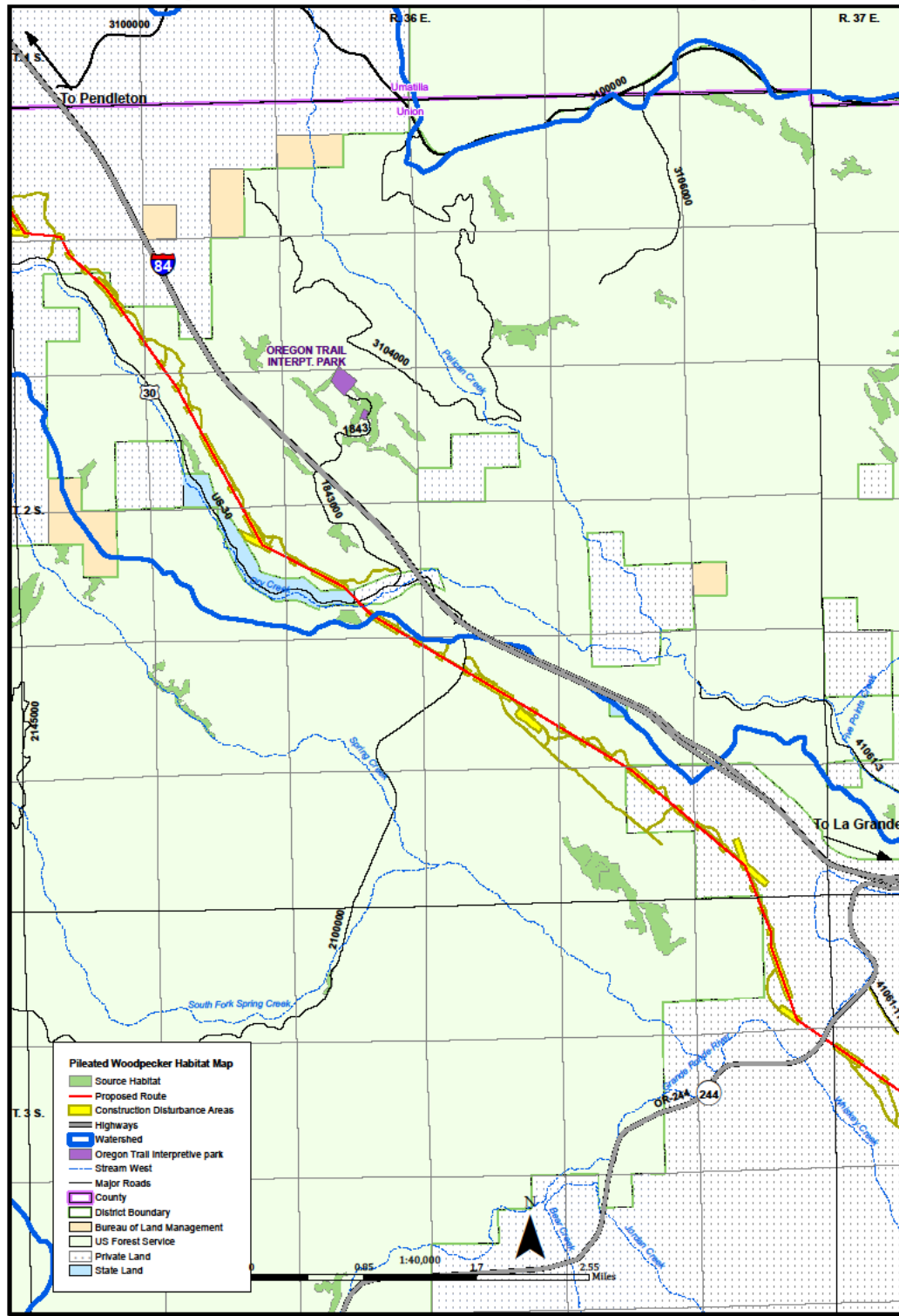


Figure 5: Proposed Alternative: Pileated Woodpecker Habitat Map

Boardman to Hemingway Project - Timber Canyon Alternative: Pileated Woodpecker Habitat Map

Date: 11/13/2014

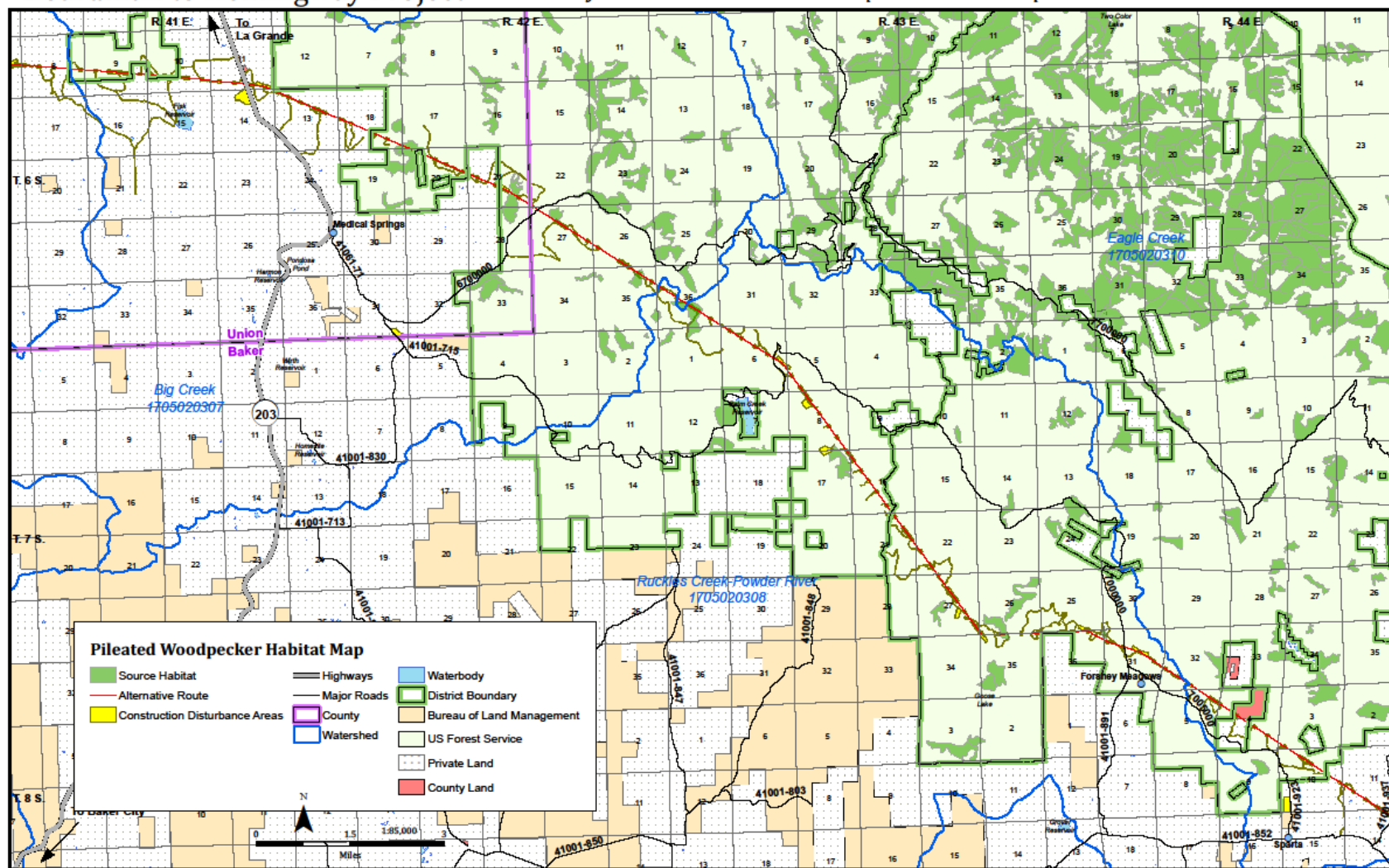


Figure 6: Timber Canyon Alternative: Pileated Woodpecker Habitat Map

Aquatic Management Indicator Species Analysis

The Wallowa-Whitman National Forest Land and Resource Management Plan identifies two fish species as Management Indicator Species (MIS). These include the redband /rainbow trout and steelhead (USDA 1990). These species were selected as they were considered to be good indicators of the maintenance and quality of instream habitats. These habitats were identified as high quality water and fishery habitat.

The NFMA regulations require that “fish and wildlife habitat be managed to maintain viable populations of existing ...species in the planning area.” To ensure that these viable populations are maintained, the Pacific Northwest Region of the Forest Service has identified management requirements for a number species within the region. These Management Indicator Species are emphasized either because of their status under ESA or because their populations can be used as an indicator of the health of a specific type of habitat (USDA 1990).

Riparian ecosystems occur at the margins of standing and flowing water, including intermittent stream channels, ephemeral ponds, and wetlands. The aquatic MIS were selected to indicate healthy stream and riparian ecosystems across the landscape. Attributes of a healthy aquatic ecosystem includes: cold and clean water; clean channel substrates; stable streambanks; healthy streamside vegetation; complex channel habitat created by large wood, cobbles, boulders, streamside vegetation, and undercut banks; deep pools; and waterways free of barriers. Healthy riparian areas maintain adequate temperature regulation, nutrient cycles, natural erosion rates, and provide for instream wood recruitment.

The fish bearing stream systems in the project area are California Gulch, Dry Creek, Pelican Creek, Rugg Springs Tributary, and 3104 Tributary to Pelican Creek. Habitat for each MIS species exists within or is adjacent to the project area and is included in the analysis area. Table 8 below describes the MIS, the habitat they represent, and whether they are present in the project analysis area.

Table 8. MIS and habitat description for the Trail project area.

MIS	Habitat Description	Habitat Present in Analysis Area	Species Present in Analysis Area
Rainbow Trout/ Redband Trout	Water quality/ Fish Habitat	Yes	Yes
Steelhead		Yes	Yes

In general, the aquatic MIS selected for the Wallowa-Whitman National Forest have similar stream and riparian ecosystem requirements. However, they do represent a range of minor differences in habitat conditions found and utilized across the forest. Because the habitat requirements for each species are generally similar and often overlap, they were collectively chosen to represent healthy stream and riparian ecosystems.

Methods used to document fish distribution include field presence/absence surveys, aquatic inventory surveys, escapement data and redd surveys. The origin of this data has come from several sources including Forest Service watershed baseline updates, Forest Service Level II stream survey reports on fish-bearing streams based on the Hankin and Reeves method of stream survey, Oregon Department of Fish & Wildlife (ODFW) spawning ground surveys, and the state of Oregon Streamnet fish distribution database. Geographic Information System data (GIS) catalogues miles of MIS distribution by fish species. Steelhead viability data from the ICTRT and found in the Mid Columbia Recovery Plan and Oregon Snake River Recovery Plan are used to characterize population trends for Mid Columbia and Snake River steelhead. Only presence/absence surveys have been completed for redband trout/rainbow trout in the project area.

Steelhead –

The viability criteria defined by the Interior Columbia Technical Review Team (ICTRT) reflects the hierarchical structure of salmonid populations and species. The criteria describe the biological characteristics for the species, Major Population Groups (MPGs) and independent populations that are consistent with a high probability of long-term persistence. The ICTRT used the viability criteria to assess the extinction risk based on

four different viable salmonid population (VSP) parameters: abundance, productivity, spatial structure and diversity. The ICTRT also assessed the “gap” between the populations current status and the desired status for delisting based on the viability criteria. The ICTRT used the information from the population –level assessments to evaluate viability at the next hierarchical level, the MPG. All Steelhead MPGs need to meet the ICTRTs viability criteria for the ESU to be rated viable.

The Lower Grande Ronde population of the Grande Ronde MPG currently does not meet the minimum abundance and productivity values that represent levels needed to achieve a viable population (95% probability of persistence over 100 years for the population). The current status of the Lower Grande Ronde River Steelhead population for risk of extinction is Low to Moderate with the desired status of Low or Very Low Risk.

The Wallowa-Whitman National Forest is utilizing this viability assessment for Snake River Steelhead populations for the purposes of MIS assessment.

Redband/Rainbow Trout–

Redband trout habitat requirements are similar to that of juvenile steelhead. Redband trout are sensitive to changes in water quality and habitat. Adult redband trout are generally associated with pool habitat, although other life stages require a wide array of habitats for rearing, hiding, feeding and resting. Pool habitat is an important refugia during low water periods. An increase in sediment in the stream channel lowers spawning success and reduces the quality and quantity of pool habitat. Other important habitat features include healthy riparian vegetation, undercut banks and large wood debris. The Wallowa-Whitman National Forest is utilizing this fish/habitat relationship to provide the basis for assessment of redband trout populations for the purposes of MIS assessment.

Only presence/absence surveys have been completed for resident salmonid species (redband trout) in the Trail Project area. In the absence of redband trout population trend data, the Wallowa-Whitman National Forest has measured key habitat variables, and then assessed changes expected to occur as a result of project activities. This MIS analysis assumes that activities that maintain and improve aquatic/riparian habitat will provide for resident fish population viability on Wallowa-Whitman National Forest lands.

Habitat Condition – The Wallowa-Whitman National Forest has completed Forest Service Region 6 Stream Surveys in most fish-bearing streams in the Trail Project area. The stream survey protocol (based on the Hankin and Reeves survey methodology) guides collection of field data for stream channels, riparian vegetation, and fish presence. Data collected from these surveys are then rated using habitat indicator benchmarks developed by the National Marine Fisheries Service (NMFS) and United States Fish and Wildlife Service (USFWS) (USDA, USDC, and USDI 2004). Measured habitat data is summarized in Table 9, and habitat rating by stream is summarized in Tables 10-14.

Table 9 – Habitat summary data for Class 1 streams in the Trail analysis area. Shading indicates that a habitat element is meeting Forest Plan RMOs and BO Matrix indicators.

Stream Name	Wetted Width	Pools/Mile ¹	Pieces LWD/Mile	W/D Ratio	% Stable Banks
California Gulch	7.2	46	133	11.2	ND
Dry Creek	9.3	27	19	11.0	ND
Pelican Creek	9.9	49	12	18.4	93
Rugg Springs Tributary	3.4	25	23	6.6	ND
RMO/Indicator	-----	96	20	<10	>80

1) RMO based on stream width. Wetted widths \leq 10 feet = 96 pools/mile, wetted width 20 to 25 = 47.
ND=No Data

Pelican Creek Subwatershed

California Gulch (Table 10) – Habitat conditions in California Gulch are mostly good with a few habitat features rated as poor to fair. There are higher than desirable road densities in the subwatershed, low number of full channel spanning pools, and slightly high width to depth ratio in regard to the PACFISH RMO of < 10. However, the width to depth ratio is within the range of width to depth ratios described for Rosgen (1996) stream types. California Gulch alternates between a Rosgen B3 and B4 stream type. The Rosgen width to depth ratios ranges from 11.7 to 38.0 for B3 stream types and ranges from 10.7 to 36.7 for B4 stream types. There is a high amount of instream large woody material, there is a high percentage of stable streambanks, and there are presently no fish barriers.

Table 10. MIS habitat summary for California Gulch.

Habitat Element	Value	Rating
Road Density (open and closed)	3.8 mi/mi ² (subwatershed)	Not Properly Functioning
Stream Temperature	<64.4 ⁰ F (RMO value)	Functioning At Risk
Streambank Stability	>80% (RMO value)	Properly Functioning
Pool Frequency/Quality	96 pools/mi (RMO value)	Not Properly Functioning
Large Wood	>20 pcs/mi (RMO value)	Properly Functioning
Riparian Zone Vegetation	Minimal loss due to a road crossing	Properly Functioning
Fish Barrier	None	Properly Functioning

Dry Creek (Table11) - Habitat conditions in Dry Creek are mostly fair. There are higher than desirable road densities in the subwatershed, low number of full channel spanning pools, and slightly high width to depth ratio in regard to the PACFISH RMO of < 10. The Rosgen stream type for Dry Creek alternates between a C3 and B3. The width to depth for Rosgen C3 stream type ranges from 10.3 to 90, and the width to depth ratio for Rosgen B3 stream type ranges from 11.7 to 38.0. Impacts to habitat include an interstate, a railroad, a state highway, and utility corridor. One culvert under Interstate I-84 is a partial barrier to the upstream passage of salmonids. This culvert is within the Oregon Department of Transportation right of way. The railroad constricts the stream in areas and reduces the amount of riparian vegetation and streamside conifers. Dry Creek, as the name implies, becomes dry after spring runoff except for a few isolated pools and areas of puddled flow.

Table 11. MIS habitat summary for Dry Creek.

Habitat Element	Value	Rating
Road Density (open and closed)	3.8 mi/mi ² (subwatershed)	Not Properly Functioning
Stream Temperature	<64.4 ⁰ F (RMO value)	Functioning At Risk
Streambank Stability	>80% (RMO value)	Properly Functioning
Pool Frequency/Quality	96 pools/mi (RMO value)	Functioning At Risk
Large Wood	>20 pcs/mi (RMO value)	Functioning At Risk
Riparian Zone Vegetation	Areas highly impacted by railroad	Functioning At Risk
Fish Barrier	One culvert	Functioning At Risk

Pelican Creek (Table12) - Habitat conditions in Pelican Creek are rated as fair. There are higher than desirable road densities in the subwatershed, lower than desirable number of full channel spanning pools, and lower than desirable amount of large wood. Streambank stability is good with 93% stable streambanks. Riparian zone vegetation is in relatively good condition except for where the 3104 road crosses. An undersized culvert has damaged streambanks and riparian vegetation downstream of the crossing. This culvert is also a partial barrier to the upstream migration of salmonids. The width to depth ratio of 18.4 exceeds the PACFISH RMO of <10, but is within the expected range of width to depth ratios for Rosgen B3 stream types of 11.7 to 38.0. Pelican Creek becomes dry after spring runoff except for isolated pools and areas of intermittent flow that support juvenile steelhead and resident redband trout.

Table 12. MIS habitat summary for Pelican Creek.

Habitat Element	Value	Rating
Road Density (open and closed)	3.8 mi/mi ² (subwatershed)	Not Properly Functioning
Stream Temperature	<64.4 ⁰ F (RMO value)	Functioning At Risk
Streambank Stability	>80% (RMO value)	Properly Functioning
Pool Frequency/Quality	96 pools/mi (RMO value)	Not Properly Functioning
Large Wood	>20 pcs/mi (RMO value)	Properly Functioning
Riparian Zone Vegetation	Minimal loss due to roads	Properly Functioning
Fish Barrier	One culvert	Functioning At Risk

Rugg Spring Tributary (Table13) - Habitat conditions in Rugg Springs Tributary are rated as fair. There are higher than desirable road densities in the subwatershed, and lower than desirable number of full channel spanning pools. There is a culvert under the railroad that is a partial barrier to the upstream migration of salmonids. The fishbearing portion of the stream is in a steep canyon with no road access. The stream has a desirable number of pieces of large wood and narrow width to depth ratio of <10. Rugg Springs Tributary becomes mostly dry after spring runoff except for isolated pools maintained by subsurface flow and areas of intermittent stream flow that's support juvenile steelhead and resident trout.

Table 13. MIS habitat summary for Rugg Springs Tributary.

Habitat Element	Value	Rating
Road Density (open and closed)	3.8 mi/mi ² (subwatershed)	Not Properly Functioning
Stream Temperature	<64.4°F (RMO value)	Functioning At Risk
Streambank Stability	>80% (RMO value)	Properly Functioning
Pool Frequency/Quality	96 pools/mi (RMO value)	Not Properly Functioning
Large Wood	>20 pcs/mi (RMO value)	Properly Functioning
Riparian Zone Vegetation	Good condition due to no road access.	Properly Functioning
Fish Barrier	One culvert under railroad	Functioning At Risk

3104 Tributary (Table 14) - Habitat conditions in the 3104 Tributary are fair with a few habitat features rated as poor. No stream habitat surveys have been conducted on the stream. Habitat conditions are based on observations made by fish and watershed personnel during field reconnaissance. There are higher than desirable road densities in the subwatershed, lower than desirable number of full channel spanning pools, and lower than desirable amount of large wood. There are no fish barriers.

Table 14. MIS habitat summary for 3104 Tributary.

Habitat Element	Value	Rating
Road Density (open and closed)	3.8 mi/mi ² (subwatershed)	Not Properly Functioning
Stream Temperature	<64.4°F (RMO value)	Functioning At Risk
Streambank Stability	>80% (RMO value)	Properly Functioning
Pool Frequency/Quality	96 pools/mi	Not Properly Functioning
Large Wood	>20 pcs/mi	Properly Functioning
Riparian Zone Vegetation	Loss due to roads and past harvest.	Functioning At Risk
Fish Barrier	None	Properly Functioning

The amount of occupied MIS habitat on the Wallowa Whitman National Forest ranges from about 320 miles to over 990 miles, depending on the species (See Table 15). Based on GIS analysis, the amount of MIS habitat in the project area (16.4 for steelhead and redband trout) represents a fraction of the overall miles of habitat for the entire forest.

Table 15. MIS distribution in the project area in relation to the Wallowa-Whitman National Forest.

MIS	Forest Distribution (mi)*	MIS in Analysis Area (mi)	Proportion of MIS habitat in Project Area out of total on Forest
Rainbow Trout/ Redband Trout	1,310	16.4	5.0%
Steelhead	990	16.4	2.0%

*Miles calculated for the Wallowa-Whitman National Forest.

There is no potential for direct effects to any MIS. There will be no direct effects to MIS fish species from the implementation of the Trail Project. All activities are away from fishbearing streams. No activities associated with the Trail project are proposed within fishbearing streams in the project area. Implementation of Standards and Guidelines in the Forest Plan as amended by Pac Fish (USDA/USDI 1994) and the Trail Project Design Criteria will avoid negative indirect effects to MIS fish species. MIS life stages present in the project area include juvenile, adult, and eggs. See Analysis of Effects on Fisheries and Watershed Resources for direct and indirect effects to fish and fish habitat.

Reduced sediment delivery improves important aquatic elements such as cleaner water, higher quality substrates for spawning and rearing habitat, and less pool infilling. Thinning densely stocked Riparian Reserve stands improves vegetation conditions, which leads to increased large wood recruitment and creates more fire resilient stands along streams. The cumulative effects are within the scope of anticipated effects to aquatic resources determined in the Wallowa-Whitman National Forest Land and Resource Management Plan (USDA 1990). For more information on cumulative effects for the Trail project, see cumulative effects analysis in this document (Section 7).

Improved Conditions

The Trail project will improve habitat conditions for the aquatic MIS in the project area through fuels reduction and thinning. Anthropogenic fine sediment delivery in the project area could decrease with project implementation as a result of road decommissioning. In the long-term, there would be a reduction in artificially induced sediment entering the stream system, benefiting aquatic MIS and their habitat. Therefore, the project will not contribute to a negative trend in viability on the Wallowa-Whitman National Forest for these species.